



London
STOCK EXCHANGE

CTS
Two
Series

CTS201

Customer Development Service

Service Manual

Issue 2



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PREFACE

CTS TWO SERIES: CDS SERVICE MANUAL

The purpose of the CTS Two Series is to provide customers with all the necessary information needed to get the most out of the Customer Development Service. It is essentially a “service manual” providing guidance on using and maximising the features of the service.

These documents give users essential and detailed information needed to understand, use and benefit from the Customer Development Service (CDS), the most comprehensive testing service offered by the London Stock Exchange. The CDS is a fully functioning simulation of the Exchange’s production environment, and is a powerful tool in fine tuning applications and functionality.

The documents are divided in to the following areas:

- General service information and guidance on each test service available within CDS
- Full details on the Model-Based Testing Service, including all market control actions

The CTS Two Series gives you the knowledge to get the best out of the CDS service, and the best out of your systems.

CTS TWO SERIES: CTS201 OVERVIEW

The “CTS201 – Customer Development Service: Service Manual” provides customers with full details of each service available with in CDS, including the:

- Live Simulation and Training Service (LSTS)
- Model-Based Testing Service (MBT)
- Production Test Instruments (PTIs)

The document describes each service, provides the market structure for each service, and specifies data refresh / resynchronisation processes, user access, pricing, booking information and the full service environment / configuration parameters.

This document is available electronically from the London Stock Exchange’s website:

<http://www.londonstockexchange.com/en-gb/products/membershiptrading/techlib/testdoc/>

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1 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to provide users with a detailed knowledge of the CDS service offered by the London Stock Exchange, to assist customers in getting the best out of the service, and the best out of the systems being tested.

In order to achieve this, an overview is provided of each service available within the CDS. This covers a number of services, including:

- Live Simulation and Training Service (LSTS)
- Model-Based Testing Service (MBT)
- Production Test Instruments (PTIs)

For each service, a description is provided to give readers a thorough understanding of what the service is, and what each service is designed to achieve. The market structure is then detailed, specifying the stocks covered by each service and the market rules that apply. The full service environment is also defined to show which segments are available within which service.

Finally, general service information is provided to help customers use each service. This section covers booking information, user access, pricing, test credits and links to further information.

1.2 CTS SERIES OF DOCUMENTS

This document is part of a series of documents that piece together to form a complete and extensive picture of all enhanced customer testing services available from the London Stock Exchange.

The range of documents comprises the following series:

- CTS One Series: Foundations (foundation data to understand the services)
- CTS Two Series: CDS Service Manual (full service information for CDS)
 - **CTS201 - CDS Service Manual (this document)**
 - CTS202 - CDS Model Based Testing Service Market Control Actions – Service Manual
- CTS Three Series: Conformance Service Manual (information for conformance)
- CTS Four Series: HVS Service Manual (full service information for HVS)
- CTS Five Series: Data Depot (referenced canned data)

1.3 VERSION HISTORY

This document, “CTS201 – Customer Development Service: Service Manual”, has been through the following iterations:

Issue	Date	Description
1.0	September 2005	First issue of CTS201 Customer Development Service: Service Manual, from the new CTS Series documents.
2.0	September 2006	Second issue of CTS201, updated to accommodate changes to the CDS service resulting from the introduction of the new Trading System

Please note:

- The CTS One Series, CTS Two Series, CTS Three Series, CTS Four Series and CTS Five Series of documents replace the London Stock Exchange’s previous Customer Testing documentation, STS101, STS103, STS104 and STS105.
- “CTS201 – Customer Development Service: Service Manual” replaces the previous “STS104 Trading and Information Services Customer Development Service – Service Guide” document.

In subsequent issues, where amendments have been made to the original content, these changes will be identified using a series of side bars as illustrated opposite.

1.4 USEFUL REFERENCE

The following section lists some useful reference material that is mentioned with in the main body of CTS201. It is recommended this material be read in conjunction with this document:

- Other documents in the CTS One Series, CTS Two Series, CTS Three Series, CTS Four Series and CTS Five Series, which are available on [the Exchange’s website](#). All of the CTS Two Series documents will be of particular relevance as they all relate to the CDS test service.
- London Stock Exchange Guidance Note for Customers Using Accredited Software, which is available on [the Exchange’s website](#).
- The Extranex Service and Testing Services Price List, available on [the Exchange’s website](#).
- The London Stock Exchange’s Trading and Information Technical Specifications (TIS101 to TIS104), which are available on [the Exchange’s website](#).
- London Stock Exchange guide to the new trading system, which is available on [the Exchange’s website](#).

1.5 NAVIGATION

Navigation is made simple throughout this document using the NavArrow navigation system, utilising hyperlink arrows.

If a topic is covered on which you require more information, the following system is utilised to help you get to the information you want, quickly and easily.



Internal Link: A white arrow links the user to another section contained within this document.



External Link: A black arrow links the user to an external source containing relevant information, e.g. another document or an area on the Exchange's website.



Contact Link: A turquoise arrow indicates a link to highlight useful contact information.

2 CUSTOMER DEVELOPMENT SERVICE OVERVIEW

2.1 SERVICE OVERVIEW

The Customer Development Service (CDS) is a fully functioning simulation of the Exchange's production environment, designed to enable customers to develop and continually enhance the functionality of their Trading and Information applications.

An order book is provided with the configuration of the live service, containing live securities, live service timings and full live service rules.

2.2 PURPOSE OF CDS

The London Stock Exchange has developed a number of technically advanced Testing Services that allow customers to test seamlessly with the Exchange's Information and Trading systems.

The CDS is the most comprehensive testing service offered by the London Stock Exchange, and allows customers to:

- Formally test the functional interface between customer's applications and the Exchange's Trading and Information systems, against a fully functioning simulation of Live Service
- Test trading strategies against an accurate and dynamic simulation of the Exchange's systems
- Use the service as a training environment for new or existing traders who want familiarity of the Exchange's Trading system
- Verify business readiness activities within a firm, including support of business procedure testing, user training and back office system testing
- Verify that system applications and infrastructures can support the delivery of the Exchange's market data and interact with the trading architecture

The CDS service provides a testing environment that can support technical testing and can be used to underpin business readiness activities, including support of business procedure testing, user training requirements and back office system testing.

The service has been designed to support both customers of the London Stock Exchange (LSE) and customers of the Dutch Trading Service (DTS). Guidance is given to customers on how each of the services available within CDS should be used to ensure maximum benefit is derived from using the service.

2.3 CDS TEST SERVICES

The CDS test service is a fully functioning simulation of the Exchange's production environment, and consists of three main services, each designed to allow customers to test various aspects of their systems and fulfil a range of testing needs.

1. Live Simulation and Training Service (LSTS): This test service provides a quote and order book with the configuration of the live service, allowing

customers to trade in a live-like test environment. The service is configured to replicate live service and contains live securities, live service timings and full live service rules. A test tool is used to generate a background of realistic and orderly trading data, to ensure a minimum level of order book depth and trading activity is present for a realistic order book depth (e.g. to simulate participant activity).

This test service also supports customer end user training activity, allowing customers to trade in a live order book environment, featuring live service rules and securities.

2. Model-Based Testing Service (MBT): This service offers customers a combination of tests, with the ability to both observe and interact with a known set of scenarios and instruments. There are five distinct “models” that comprise the MBT service:
 - Interactive Service: The ability to interact with automatically generated activity over extended hours
 - Market Control Actions: The ability to observe scripted business and technical events in a specialised market structure
 - Customer Specific Service Instruments: Sole access to the order book for a number of securities
 - Pre-Conformance: The ability to download Conformance reference data prior to a Conformance testing session
 - Volume Input Service: This test facility allows customers to enter a high volume of messages after normal market hours on the MBT segments.
3. Production Test Instruments (PTIs): This test service provides test segments on the CDS and Production environments, for customers to enter test transactions in CDS and live test segments.

Reference data downloads are provided for all services at 05:00 each business day.

2.4 LEGACY AND ENHANCED CDS SERVICES

The following table details the relationship between the legacy and enhanced Customer Test Services that support the new trading system.

Legacy Test Service	Enhanced Test Service
Live Simulation Service	Live Simulation and Training Service
Training Service	
Scripted Scenarios Service	Model-Based Testing Service
Customer Specific Service	
Volume Input Service	

2.5 CDS SERVICES AVAILABLE FOR EACH MARKET

The following table lists the CDS services available for the each market.

CDS Test Service	LSE	DTS
Live Simulation and Training Service	✓	✓
Model-Based Testing Service	✓	
Production Test Instruments	✓	

3 SERVICE DESCRIPTION SUMMARY

The following section provides a detailed description of each of the testing services that are available with in the CDS environment to enable customers to maximise the benefits that the services offer. This section covers:

- Service description and purpose of each service
- User guidelines detailing how to use the services and how to maximise benefits
- Service information covering service timings, booking information, access details, refresh frequency and background data generation.

3.1 KEY CHARACTERISTICS: CDS LONDON MARKET

The dynamic diagram below summarises the key characteristics of the CDS testing services that are available for the London Market. You can click on the diagram to navigate to sections containing more information on each topic.

<u>Customer Development Service: London Market</u>				
Service	Live Simulation and Training	Model Based Testing	Production Test Instruments	
Description	Provides customers with a live-like Trading environment with live-like securities, periods and service rules.	Provides customers with the ability to observe and interact with a known set of scenarios comprised of predefined market actions.	Test segments available on both the Production and CDS environments	
Background Data	Background trading data generated by the Exchange	Background trading data generated for Interactive service	No background trading data generated	
Refresh Frequency	Refreshed with subset of production reference data on a weekly basis (some segments ring-fenced)	Static data, including market configs, segments and instruments. Refreshed from CDS base data nightly	These are not refreshed but are available for either quote, order and trade report only	
Service Timings	Live service timings	Scenarios available during extended hours	Live service timings	

3.2 KEY CHARACTERISTICS: CDS DUTCH TRADING SERVICE MARKET

A LSTS is also available for Dutch Trading Service (DTS) customers, allowing customers to trade full order book with live reference data and rules. There are no other CDS services currently available for DTS customers other than the LSTS.

4 LIVE SIMULATION AND TRAINING SERVICE DESCRIPTION

4.1 SERVICE DESCRIPTION

The purpose of the Live Simulation and Training Service (LSTS) is to enable users to interact with an order book with the configuration of the live service, allowing customers to trade in a live-like test environment using live securities and live rules.

This service also supports customer end user training activity, allowing customers to trade in an order book based on the live securities.

Customers can use the service for training, increasing user familiarity of Exchange systems and procedure testing. In addition, the LSTS can be used in applications testing for systems requiring a constant flow of trading data, as the LSTS has realistic background trading data generated.

4.2 MARKET STRUCTURE

The LSTS is configured to replicate live service and as such contains live securities, live service timings and full live service rules.

The service for the London Market consists of the entire market with identical instrument codes, mnemonics and supporting reference data to the live service. These securities are configured in market segments identical to the live service. Regulatory News Service (RNS) announcements are broadcast throughout the day, which generate A-markers for the specified instruments. Market segments are also configured for the DTS market.

The market structure is as follows:

LSE: All live market segments

DTS: All live market segments

4.3 BACKGROUND DATA

A test tool is used to generate a background of realistic and orderly trading data, to ensure a minimum level of order book depth and trading activity is present across key segments. This automated liquidity provides a realistic order book depth in accordance to market rules.

The automated entry tool will:

- Enter and delete limit orders at or around the best price for all instruments
- Enter aggressive orders to execute against limit orders at the best price
- Enter and delete market orders during opening and closing auctions
- Maintain committed principal orders by updating orders and prices accordingly (note this is for relevant market segments)

Customers are able to enter or delete orders for any stocks against this background data. The aim of this tool is not to compete against other trading participants, but to provide depth and activity within the order book.

4.4 DATA REFRESH PROCESS

4.4.1 Frequency

In order to ensure the LSTS is kept in line with the Live Service, a defined set of segments along with their associated structures, securities and rules will be refreshed on the CDS environment from the production environment. This reference data refresh will take place on a weekly basis.

For each refreshed security, the Last Automatic Trade Price, Static Base Price and Dynamic Base Price will be brought across from the Production service, effectively refreshing the CDS system with the live price for the LSTS securities. Note other services such as SEAQ - SETSqx can have mid price, closing price and market maker quotes also.

Note: This will provide a more up to date service than the legacy Live Simulation Service, which was refreshed quarterly.

4.4.2 Ring-Fencing of Segments

In order for the Exchange to be able to introduce new products into the CDS environment prior to their implementation in Production, data can be 'ring fenced' at the segment level in CDS so that they are excluded from the Live reference data refresh.

Data entities associated with a ring-fenced segment will not be updated when the Reference Data Refresh process is performed.

The table below shows how scheduled refresh from the Production environment maps to the LSTS:

Reference Data Category	Refreshed from Live	Description
Period	No	CDS Periods will be maintained separately from Production.
Segment	Partial	Refreshed weekly; excludes any "ring-fenced" segments
Sector	Partial	Refreshed weekly; excludes any sectors within "ring-fenced" segments
Security	Partial	Refreshed weekly; excludes any securities within "ring-fenced" segments
Issuer	Partial	Refreshed weekly; excludes any "ring-fenced" issuers
Settlement Venue	Partial	Refreshed weekly; excludes any settlement venues within "ring-fenced" segments

4.5 USER GUIDELINES

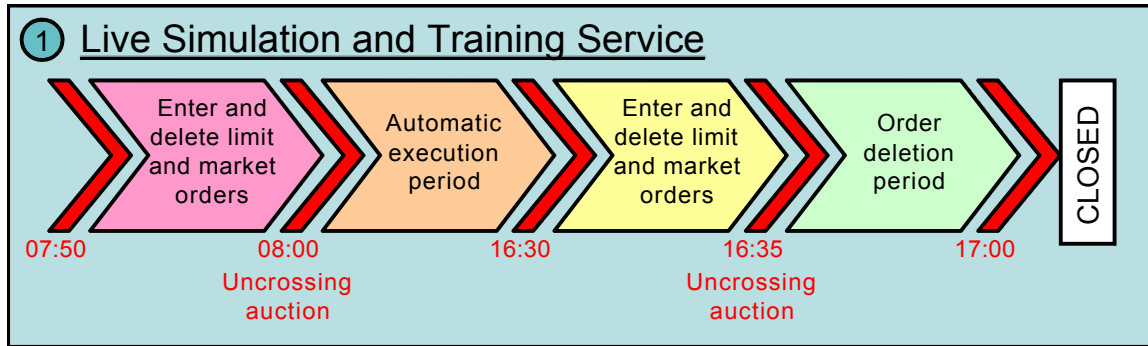
Customers of the LSTS service may enter and delete orders of all types within the published period rules. However, usage of the system is monitored. Customers consistently performing irregular activity will be asked to modify their use of the service and may be suspended if their activity affects other participants' usage of the customer development service.

4.6 SERVICE TIMINGS

4.6.1 London Market Service Times

The service hours for the LSTS match those of the live service, with identical period timings to the live market segments. These service hours can be found in [TIS101 Service Definition](#)

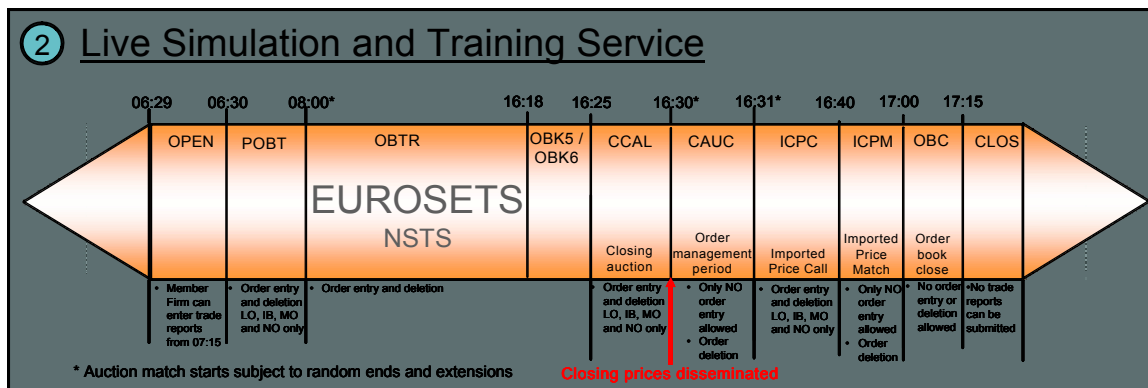
For SETS based segments, service hours in UK time are essentially as follows (note that this is not the full schedule and does not include trade reporting periods):



Note that all live simulation service segments comprise of all segments on the LSE's production service (e.g., AIM, IOB and SETSqx). As such, these market segments are configured with the market period rules and timings mirroring the live service.

4.6.2 Dutch Market Service Times

The service hours for the Dutch Market LSTS are as follows (please note these service times are in CET):



4.7 SCHEDULED SCENARIOS

LSTS will support the following specific scenarios, which can be run on a scheduled basis:

- Index expiry scenario:** This provides an Index Expiry period schedule using a live-like market configuration. This is based on the previous day to the Live service scenario whereby every third Friday in each month the "Last Trading

Day” is defined for indices, and there is an auction period for all related securities. Therefore on CDS this will occur on every third Thursday in each month. A set of dates will be provided by the Exchange on an annual basis and an Index Expiry period schedule will be invoked on these days.

- Disaster recovery scenario: This provides customers with a Disaster Recovery period schedule using a live-like market configuration. There is no physical switching of sites as part of this scenario. A set of dates will be provided by the Exchange on an annual basis and a Disaster Recovery period schedule will be invoked on these days.

5 MODEL BASED TESTING SERVICE DESCRIPTION

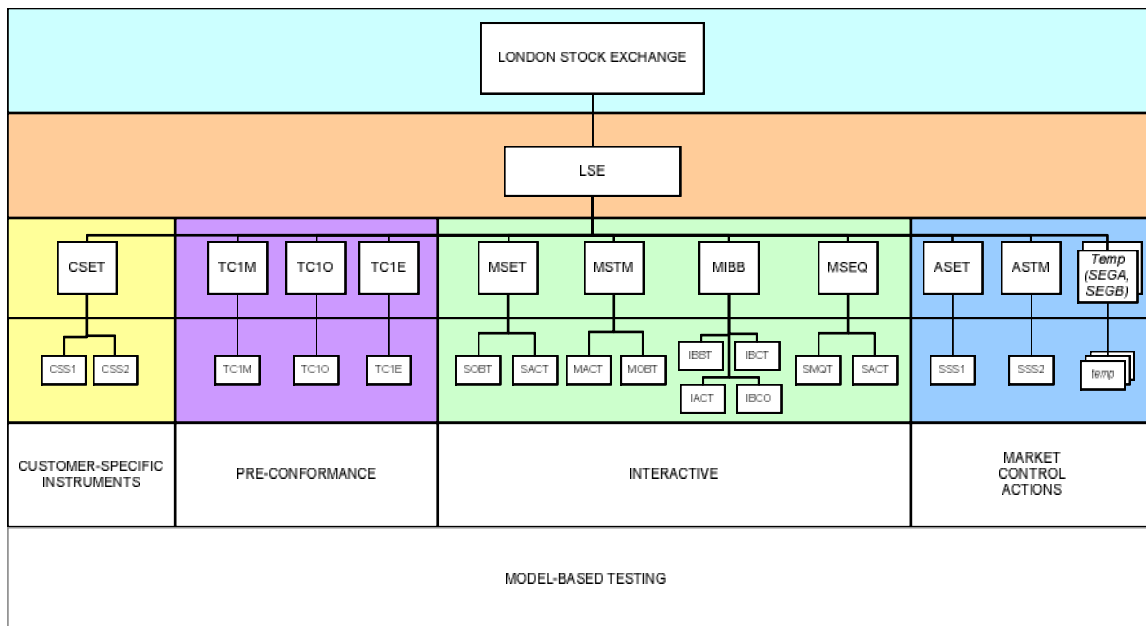
5.1 SERVICE DESCRIPTION

This service offers customers a combination of tests, with the ability to both observe and interact with a known set of scenarios and instruments. There are five distinct “models” that comprise the MBT service:

- Interactive Service: The ability to interact with automatically generated activity over extended hours
- Market Control Actions: The ability to observe scripted business and technical events in a specialised market structure
- Customer Specific Instruments: Sole access to the order book for a number of securities
- Pre-Conformance: The ability to download Conformance reference data prior to a Conformance testing session
- Volume Input Service: This test facility allows customers to enter a high volume of messages after normal market hours on the MBT segments.

5.2 MARKET STRUCTURE

The diagram below shows the market structure for the MBT service:



5.3 INTERACTIVE SERVICE

The Interactive service allows customers to interact with automatically generated activity across a series of segments/sectors which represent each of the 4 major market models. The market models are as follows:

Market Model	Descriptions
SETS style	SETS order book trading with opening/closing auctions
	SETS order book trading with regular intraday auctions
SETSm style	SETSm order book trading with opening/closing auctions
	SETSm order book trading with regular intraday auctions
SEAQ style	SEAQ mandatory quote period
	SEAQ mandatory quote period with regular auctions
ITBB style	ITBB order book trading with opening/closing auctions
	ITBB order book trading with regular intraday auctions
	ITBB auction only trading
	ITBB CP vs non-CP order execution

5.3.1 Market Structure

The market structure for the Interactive Service is as follows:

Market Model	Market Segment	Market Sector
SETS style	MSET	SOBT
		SACT
SETSm style	MSTM	MACT
		MOBT
SEAQ style	MSEQ	SMQT
		SACT
ITBB style	MIBB	IBBT
		IBCT
		IACT
		IBCO

5.3.2 Background Data

Automated background activity will be generated in each of these models.

5.3.3 Data Refresh Process

These segments will utilise dummy data and will therefore not be included within the weekly reference data refresh.

5.3.4 Service Timings

The Interactive Service commences 07:50 hours and ends at 20:00 hours.

5.4 MARKET CONTROL ACTIONS

The Market Control Actions model is a test service for customers to observe scripted business and technical events in a SETS and SETSm market model.



Full details of the Market Control Actions are contained within “CTS202 Market Control Actions Service Manual”, which is available via [the Exchange's website](#).

5.4.1 Market Structure

The market structure for the Market Control Actions model is as follows:

Market Model	Market Segment		Market Sector
SETS style	RSET		SSS1
SETSm style	RSTM		SSS2
Market Segment Additions / Deletions and Instrument Moves	SEGA, SEGB, SEGC,	SEGD, SEGE, ...	

5.4.2 Background Data

Automated scripts are generated by the Exchange to create particular scenarios.

5.4.3 Data Refresh Process

In order to ensure that the results of each scenario are consistent, customers may observe the MCA but no customer participation is allowed, and the MCA segments will be reset to a known position each day (i.e. refreshed daily).

5.4.4 Service Timings

The Market Control Actions service is available from 08:00 hours to 20:00 hours.

5.5 CUSTOMER SPECIFIC SERVICE

The purpose of the Customer Specific Service is to provide customers with sole access to a number of order book securities, enabling users to create their own business scenarios for training purposes and for trading strategy testing, without interference from the Exchange or from other service users.

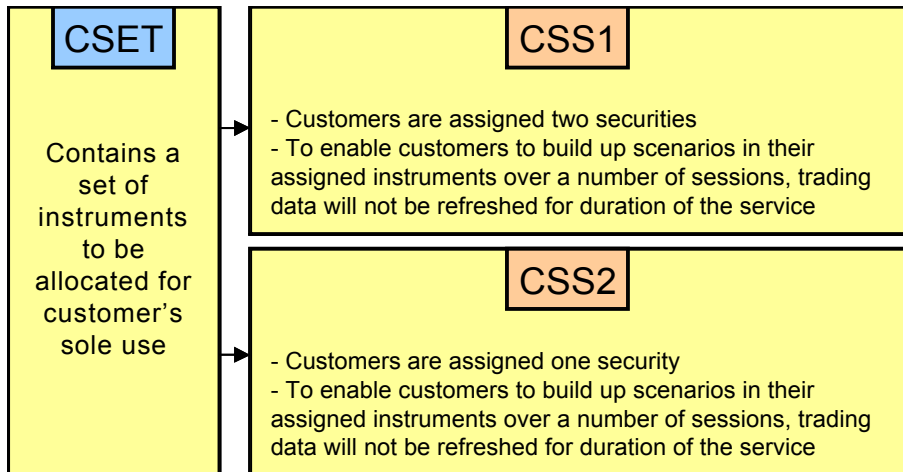
Of the three test instruments to which customers have access, two are set-up to initially contain no trading data. The third instrument is configured with a sample order book. Users are provided with a supplementary test participant code to enable those customers who have a self-execution check in their software to trade against themselves.

Once the test session has been booked, customers will be informed of their instruments and their supplementary user codes.

5.5.1 Market Structure

The CSS is a SETS order-based segment with similar rules to the SET1 segment in the LSTS, although with extended trading hours. The securities are contained within an index specific to the service.

The CSET segment contains 600 instruments, split into two market sectors, CSS1 and CSS2. Each customer is assigned two securities from CSS1 and one from CSS2. The diagram below illustrates the London market structure and characteristics of the instruments within each sector.



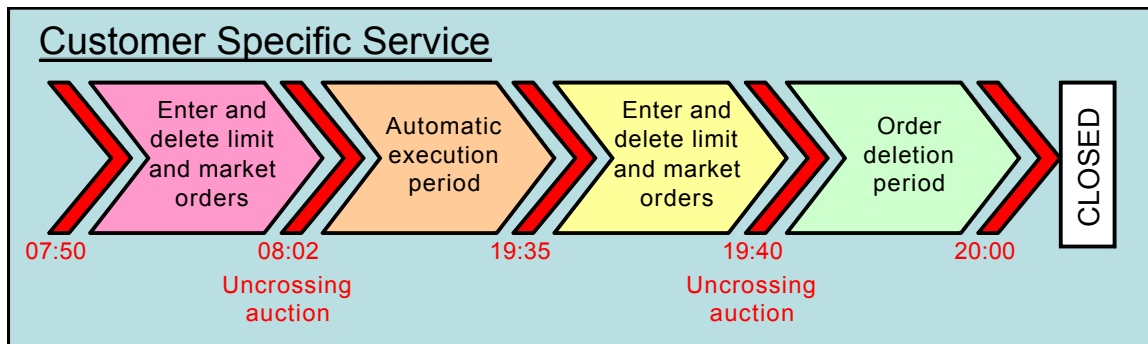
5.5.2 Back ground Data

No background data is generated for CSS.

5.5.3 Data Refresh Process

To enable customers to build up scenarios in their assigned instruments over a number of sessions, trading data in CSS1 and CSS2 stocks is not refreshed throughout the duration of the service unless this is necessary to maintain the stability of the service.

5.5.4 Service Timings



5.6 PRE-CONFORMANCE TEST SERVICE

This service is part of CDS, and allows customers to test the successful processing of this data prior to their first conformance test. It consists of the reference data for 3 Conformance segments (TC1M, TC1O and TC1E).

This service is broadcast to customers as part of the daily reference data downloads, and is included on the existing UK reference data service (Service Channel S04).

Note: Customers will receive the reference data only, as no participation is allowed.

5.6.1 Market Structure

The Market Structure is as follows:

LSE: TC1M, TC1O, TC1E

5.6.2 Background Data

Daily reference data download data is disseminated to customers via Service Channel S04.

5.6.3 Data Refresh Process

The data is broadcast daily as part of the reference data download.

5.6.4 Service Timings

The Pre-Conformance service will disseminate reference data between the hours of 05:00 hours and 06:30 hours.

5.7 VOLUME INPUT SERVICE

The purpose of the Volume Input Service (VIS) test facility is to allow customers to input a large volume of quotes and orders against the Exchange's central system to performance test the reaction of internal systems under a transaction load. This is available to CDS customers after live service hours (from 17:30 hours to 20:00 hours) on the MBT test segments.

This service should be used to test realistic business events, e.g. the testing of automated basket or portfolio trading scenarios in different market conditions. It should be noted that the facility is not sized to support technical capacity testing, and customers using the facility for this purpose should be aware of the following:

- The test environment is sized at a lower specification than the live service, and as such response times are slower than those observed on live.
- The ability of the broadcast interface to handle high volume data is tested in the HVS cycle of the Information Conformance service.

5.8 USER GUIDELINES

The following guidelines are applicable for the MBT:

- Customers may enter trading data for securities supporting "Interactive" scenarios that require customer participation. These scenarios require customers to follow usage guidelines for each instrument.
- Customers wishing to enter quotes in any instruments in which they are not registered on the live service should inform the customer testing team that they wish to do so when booking the test sessions, in order that the necessary security registrations can be performed. These additional registrations are not reflected in live service.

- For the Customer Specific (CSET) instruments, customers should not enter any data other than for their own assigned securities, and should inform the London Stock Exchange Service Control Desk on +44 207 797 3100 or the Client Technology Group on +44 207 797 3939 of any apparent breaches of this rule.
- Customers should not use automated input facilities within the MBT service, other than for the Volume Input Service after live service hours on the MBT segments.

6 PRODUCTION TEST INSTRUMENTS SERVICE DESCRIPTION

6.1 SERVICE DESCRIPTION

This test service provides test segments on the CDS and Production environments, for customers to enter test transactions. Testing is confined to 50 test securities that are available on the live service during live service hours.

The test service enables customers to verify system configurations without the need to enter “real” transactions, by entering a small volume of transactions on the test and live production services.

6.2 MARKET STRUCTURE

The table below lists test segments that exist on both the Production and CDS environments that are available on the live service for entering test transactions:

Market Type	Market Segment	Market Sector	Description
Order driven	ODTT	ODTT	Order driven test securities on live
Quote driven	TEST	DOTS	Comprises domestic test securities

The following table details the test securities that are available on the Production Test Instruments service for entering test transactions:

Market Segment	Market Sector	T.I. Mnemonic	Currency Code	ISIN Code	SEDOL Code	NMS	Country of Register	Price Format
TEST	DOTS	TE10	GBX	GB0071657976	7165797	200000	GB	Q
TEST	DOTS	TE11	GBX	GB0071729809	7172980	200000	GB	Q
TEST	DOTS	TE12	GBX	GB0071623234	7162323	200000	GB	Q
TEST	DOTS	TE13	GBX	GB0071786213	7178621	200000	GB	Q
TEST	DOTS	TE15	GBP	GB0070000103	7000010	200000	GB	A
TEST	DOTS	TE16	GBX	GB0071262116	7126211	200000	GB	Q
TEST	DOTS	TE17	GBX	GB0071262009	7126200	200000	GB	H
TEST	DOTS	TES0	GBX	GB0070006944	7000694	200000	GB	Q
TEST	DOTS	TES1	GBX	GB0070007025	7000702	200000	GB	Q
TEST	DOTS	TES2	GBX	GB0070007132	7000713	200000	GB	Q
TEST	DOTS	TES3	GBX	GB0070007249	7000724	200000	GB	Q
TEST	DOTS	TES4	GBX	GB0070007355	7000735	200000	GB	Q
TEST	DOTS	TR00	GBX	GB0032162579	3216257	200000	GB	Z
TEST	DOTS	TR01	GBX	GB0032162686	3216268	200000	GB	Z
TEST	DOTS	TYK1	GBX	GB0070004121	7000412	200000	GB	D
TEST	DOTS	TYK2	GBX	GB0070004238	7000423	200000	GB	D
TEST	DOTS	TYK3	EUR	GB0070004345	7000434	200000	GB	D
TEST	DOTS	TYK4	EUR	GB0070004451	7000445	200000	GB	D
TEST	DOTS	TYK5	EUR	GB0070004568	7000456	200000	GB	L
TEST	DOTS	TYK6	EUR	GB0070004675	7000467	200000	GB	L
ODTT	ODTT	TE01	GBX	GB0032207424	3220742	25000	GB	Z
ODTT	ODTT	TE02	GBX	GB0032207531	3220753	25000	GB	Z
ODTT	ODTT	TE18	GBX	GB0071262223	7126222	25000	GB	Q
ODTT	ODTT	TE19	GBX	GB0071262330	7126233	25000	GB	Q
ODTT	ODTT	TE20	GBX	GB0071262447	7126244	25000	GB	Q
ODTT	ODTT	TE21	GBX	GB0071262553	7126255	25000	GB	H
ODTT	ODTT	TE22	GBX	GB0071262660	7126266	25000	GB	H

Market Segment	Market Sector	T.I. Mnemonic	Currency Code	ISIN Code	SEDOL Code	NMS	Country of Register	Price Format
ODTT	ODTT	TE23	GBX	GB0071262777	7126277	25000	GB	H
ODTT	ODTT	TE24	GBX	GB0071262884	7126288	25000	GB	W
ODTT	ODTT	TE25	GBX	GB0071262991	7126299	25000	GB	W
ODTT	ODTT	TK12	EUR	GB0070005201	7000520	25000	GB	D
ODTT	ODTT	TK13	EUR	GB0070005318	7000531	25000	GB	D
ODTT	ODTT	TK14	EUR	GB0070005425	7000542	25000	GB	J
ODTT	ODTT	TK15	EUR	GB0070005532	7000553	25000	GB	J
ODTT	ODTT	TK16	EUR	GB0070005649	7000564	25000	GB	K
ODTT	ODTT	TK17	EUR	GB0070005755	7000575	25000	GB	K
ODTT	ODTT	TK18	EUR	GB0070005862	7000586	25000	GB	L
ODTT	ODTT	TK19	EUR	GB0070005979	7000597	25000	GB	L
ODTT	ODTT	TK20	EUR	GB0070006050	7000605	25000	GB	L
ODTT	ODTT	WPPC	GBX	GB00A9740423	9740423	25000	GB	Q

6.3 BACKGROUND DATA

No background data is generated by the Exchange in this service.

6.4 DATA REFRESH PROCESS

These are test segments therefore a data refresh is not applicable.

6.5 USER GUIDELINES

Customers are recommended to perform the following activities:

- Enter a small volume of quote updates from 07:00 on each trading day
- Enter a small volume of orders from 07:00 on each trading day
- Customers are allowed to enter all applicable trade reports in that segment

Please note this particular test service is not intended for performance testing and must not be used to enter large volumes of transactions. The Volume Input Service that comprises the MBT test service should be used where higher test volumes need to be submitted.

6.6 SERVICE TIMINGS

Production Test Instruments test service is available during normal trading service hours of 07:00 to 17:15 on every trading day, as detailed in the table below:

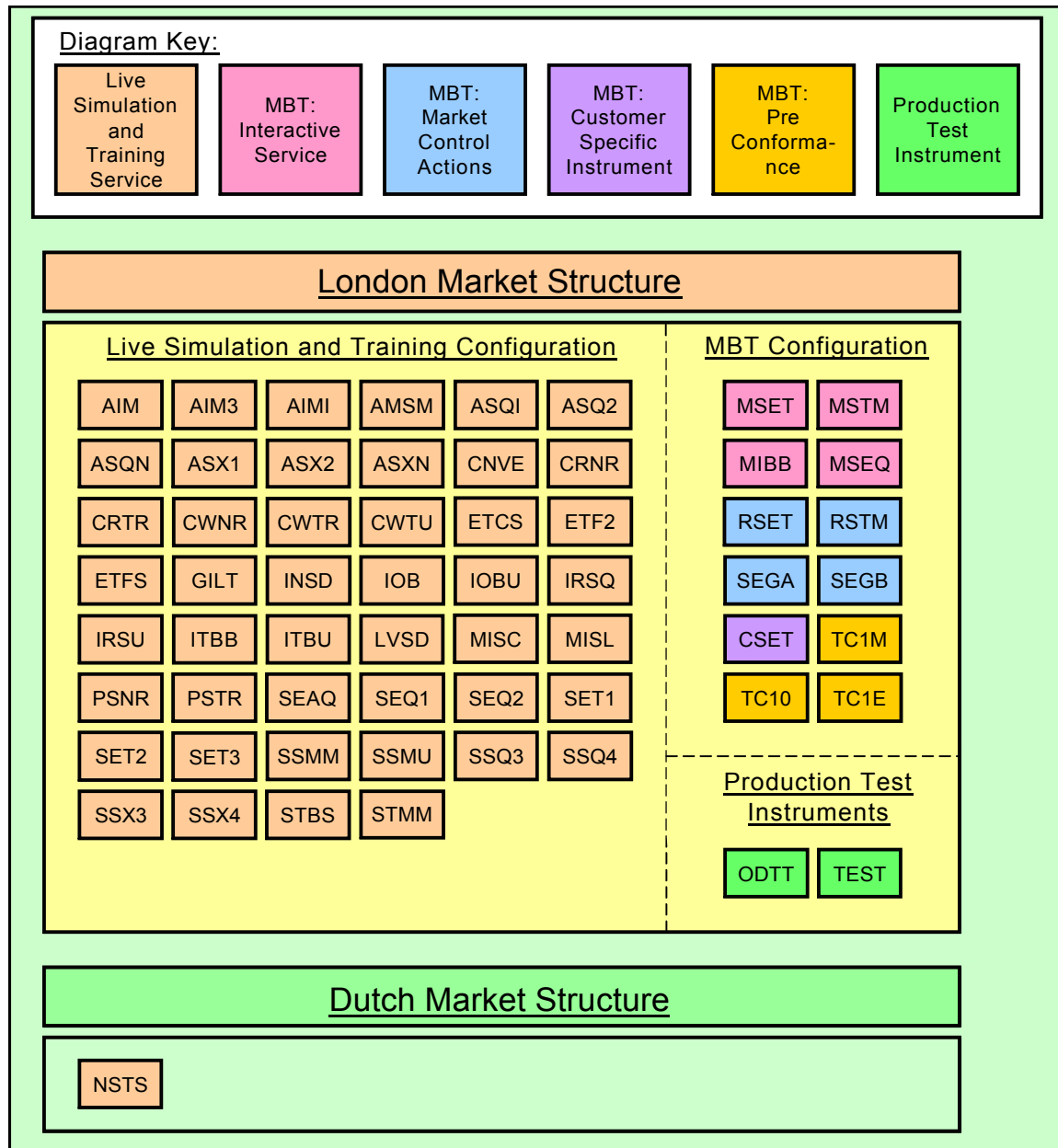
Production Test Instruments	Availability	Service Hours	Additional Notes
Production Test Instruments	Five days per week	07:00 to 17:15	Testing is available during normal trading service hours.

7 SERVICE ENVIRONMENT

The following section details the environment that the CDS service is supported on.

7.1 CDS SEGMENT CONFIGURATION

The diagram below describes the Market Structure for the various markets covered by the Customer Development Service. Please note this market segment configuration can be updated regularly so please refer to [the Exchange's website](#) for the latest version. The CDS Segment Configuration is currently as follows:



In order to create a more realistic CDS environment the current business database is synchronised with the Live Service environment on a weekly basis. This ensures that all live segments are accurately represented on the CDS environment. Please note that customers are added to new market segments as appropriate.

Specific test segments for MBT services have been retained on CDS and are highlighted above.

Customers are not registered in these instruments by default, and should contact the London Stock Exchange Service Control Desk on +44 207 797 3100 or the Client Technology Group on +44 207 797 3939.

7.2 RESYNCHRONISATION

The CDS service is engineered to provide a live-like test environment, and as such mirrors the live service in a number of ways, including live securities, live service timings and full live service rules.

In order to achieve this there are periodic CDS resynchronisation activities undertaken against the live environment of all reference data and prices.

It should be noted that CDS can deviate from live service in a number of ways:

- New segments can be added to CDS before they are added to the live environment, allowing customers to test these services before Live Service access.
- The data on CDS can deviate from the live environment due to customer interaction with CDS. For example customers can enter their own orders in CDS moving prices in the 'test market' away from prices in the 'real market'.

7.3 DATABASE REFRESH ROUTINE

On a daily basis, all LSTS and MBT segments, except those used for Market Control Actions, will be rolled forward in an equivalent manner to the Live environment (i.e. the order book persists).

The MBT segments for Market Control Actions will be restored to a fixed start of day position, including deletion of the order books.

On a weekly basis the following processes will be run which are not in the daily schedule:

- Reference data Refresh:
 - Reference data delete
 - Reference data load into LSTS, excluding ring-fenced segments
- Environment Cleardown
 - Order Book deletion

The above processes are LSTS specific. There will be no distinction on MBT between daily and weekly refreshes.

The data refresh is performed at the database level rather than at the application level, and is therefore not reflected in any information that is broadcast to customers.

7.3.1 Quote and Order Book

The LSTS order book will be technically cleared down on a weekly basis removing all orders and Executable Quotes from the order book. Any orders entered on the Friday prior to the refresh will be removed as part of the batch process without participants observing Delete Messages for these orders. If participants are required to maintain Executable Quotes in the refreshed securities they must re-enter these on the next business day post re-synch.

7.3.2 Reference Data

The Market Control Actions service includes scripted actions to update, add or delete system reference data each day (e.g. adding a new segment, deleting an existing instrument). To ensure that customers' databases are kept in line with the CDS database it is necessary for users to implement one of the following procedures:

- Request a full reference data download before each testing session
- Maintain a database copy of the start-of-day reference data position and refresh this prior to each test session.

These downloads are provided, as for the live service, at the beginning of the day, starting at 05:00 (UK time).

7.4 REGULATORY NEW SERVICE (RNS)

Regulatory news announcements are broadcast from the Regulatory News Service (RNS) throughout the trading day, based on announcements taken from the live service.

Announcement markers (A-markers) are generated for instruments referenced by the announcements. The same announcements are broadcast daily.

8 SERVICE INFORMATION

8.1 SERVICE AVAILABILITY

The customer development services are available on each business day. Customers are encouraged to access CDS prior to conforming their software.

The table below summarises the CDS service availability for each market:

CDS Test Service	Availability	Service Hours	Additional Notes
Live Simulation and Training Service	Five days a week	07:50 to 17:00	
Model Based Testing Services: <ul style="list-style-type: none"> Interactive Service Market Control Actions Customer Specific Service Pre-Conformance Volume Input Service 		07:50 to 20:00 08:00 to 20:00 07:50 to 20:00 05:00 to 06:30 17:30 to 20:00	Reference data sent After live service hours on the MBT segments
Production Test Instruments		07:00 to 17:15	Testing is available during normal trading service hours.

8.2 USER ACCESS

8.2.1 Pre-Requisite Testing

New customers and existing customers are encouraged to access the CDS prior to conforming their software. Existing customers making internal system enhancements may take a technical readiness test before accessing the service, although this is not mandatory.

8.2.2 Physical Access

Physical access to the CDS service is provided via the Exchange's managed network service, Extranex. Customers can connect to CDS using Extranex in the following ways:

- A dedicated customer test configuration
- Customers with a resilient Service Access Point (SAP) can arrange for the back-up line to be configured to access the CDS test service



For further details of the Extranex service, customers should contact their account manager, or the Client Technology Group on +44 207 797 3939.

For customers wishing to access the CDS test service via the Extranex service, the following table provides details of the network IP addresses and associated ports for access to Service Channels on CDS.

Service Code	Service Channel	IP Address	Port
S01	UK Level 1	233.115.135.71	61000
S02	UK Level 1 Plus	233.115.135.72	61000
S03	UK Level 2	233.115.135.73	61000
S04	UK Reference Data	233.115.135.74	61000
S05	International Level 1	233.115.135.75	61000
S06	International Level 1 Plus	233.115.135.76	61000
S07	International Level 2	233.115.135.77	61000
S08	International Reference Data	233.115.135.78	61000
S09	Dutch Trading Service Level 1	233.115.135.79	61000
S10	Dutch Trading Service Level 1 Plus	233.115.135.80	61000
S11	Dutch Trading Service Level 2	233.115.135.81	61000
S12	Dutch Trading Service Reference Data	233.115.135.82	61000
S13	Cover Warrants Level 1	233.115.135.83	61000
S14	Cover Warrants Level 1 Plus	233.115.135.84	61000
S15	Cover Warrants Level 2	233.115.135.85	61000
S16	Market Status Indicators	233.115.135.86	61000
S17	Market Reference Data	233.115.135.87	61000
S18	RNS News	233.115.135.88	61000
S19	DOL (Full)	233.115.135.89	61000
S20	DOL (Changes)	233.115.135.90	61000
S21	UK and International Off Book Trade Reports	233.115.135.91	61000
S22	European Off Book Trade Reports	233.115.135.92	61000
S23	UK and International Off Book Trade Reports Reference Data	233.115.135.93	61000
S24	European Off Book Trade Reports Reference Data	233.115.135.94	61000

Interactive Interface	IP Address	Port
Interactive Request Interface	10.5.7.110	52200
Secure Interactive Interface	10.5.7.100	51100

The following table provides details of the network IP addresses and associated ports for access to JSE Broadcast Data Groups (BDGs) on CDS.

BDG	Service Channel	IP Address	Port
J01	JSE Start of Day Public Order Book	10.5.51.99	49301
J02	African Market Rules – Full Download	10.5.51.100	49302
J03	African Market Reference Data – Full D/L	10.5.51.101	49303
J10	African Market Rules – Changes	10.5.51.102	49310
J11	African Market Reference Data – Changes	10.5.51.103	49311
J20	JSE Orders Level 2	10.5.51.104	49320
J21	JSE Intra-day Prices Level 1	10.5.51.105	49321
J22	JSE Trades	10.5.51.106	49322
J23	JSE Market Status Indicators	10.5.51.107	49323
J24	JSE VWAP	10.5.51.108	49324
J25	JSE Cumulative Number and Volume of Trades	10.5.51.109	49325
J50	JSE News	10.5.51.110	49350
J51	FTSE / JSE Africa Indices	10.5.51.111	49351
N01	NSX Start of Day Public Order Book	10.5.51.112	49381

N02	NSX Market Data	10.5.51.113	49382
N03	NSX Trades	10.5.51.114	49383
N04	NSX Indices	10.5.51.115	49384

For UK Customers receiving JSE Data:

Interactive Interface	IP Address	Port
Interactive Request Interface	10.5.7.110	52200
Secure Interactive Interface	10.1.9.100	51110

8.3 PRICING

Access to CDS is available as single bookable test sessions that allow access to the full trading day with extended hours, or via a Continuous Access Service (CAS) connection.

The CAS option is a cost effective and efficient means of testing for customers who test regularly, or who appreciate the convenience of uninterrupted access. The CAS service utilises a single trading and information enablement to provide customers with continuous, unmetered access.



Full and up to date details on testing service prices (including CDS bookable test slots and CDS continuous access), as well as test session allocation, are contained in the Extranex Service and Testing Services Price List, available on [the Exchange's website](#).



For terms and conditions relating to these services, please refer to the Testing Services Order Form and Testing Agreement, available on [the Exchange's website](#). The Exchange reserves the right to amend any prices at its sole discretion.

8.4 TEST CREDIT ALLOCATION

Customers accessing CDS are allocated a number of free test sessions, depending on customer type.

The table below identifies Extranex test credit allocations for new installations¹.

Customer Type	Host to Host Accredited¹ software		Host to Host un-accredited software		Trading access workstation	Vendor access network
	Trading services	Information services	Trading services	Information services	Market access workstation	Vendor access workstation
Bookable CDS sessions	5	5	5	5	0	0

¹ = Please contact your Account Manager to ascertain if your choice of software is accredited.

Software houses and vendors are not allowed to use customer credits, without prior written authorisation from the Exchange. The test credits are allocated to the company which orders the SAP installation. Please note test credit allocations are provided as a guide only, and are subject to change. Please refer to the Extranex Service and Testing Services Price List for the most up to date allocation information, or contact your Account Manager.

For terms and conditions relating to these services, please refer to the Testing Services Order Form and Testing Agreement. The Exchange reserves the right to amend any prices or test allocations at its sole discretion.

8.5 BOOKING TEST SESSIONS

For access to the CDS Test Services, customers can book test sessions by contacting the London Stock Exchange Service Control Desk on +44 207 797 3100 or the Client Technology Group on +44 207 797 3939. A testing session allows access to all of the services for a complete day.

CDS sessions can be pre-booked; all weekday test sessions must be booked at least three working days in advance. Any sessions cancelled with less than three days notice will be forfeited. Please note that end-to-end testing between CDS and the CREST trial environment is also provided twice a year.

Bookings can be accepted for CDS sessions where less than three working days notice has been provided, subject to availability. Please note that an additional charge for these bookings will apply, as detailed above.



Scheduling of the customer test sessions is managed by the London Stock Exchange's customer testing team who can be contacted on **+44 207 797 3100**.

8.6 EXCHANGE SUPPORT AND USEFUL NUMBERS

Technical support for the service is provided by a dedicated team within the customer testing team who can be contacted on **+44 207 797 3100** by selecting the general enquiries option within the SETS customer testing menu. Support is available between 08:00 and 18:00 daily.

Technical queries will be answered by the London Stock Exchange's Service Control Desk, whilst business related queries will be answered by the Client Technology Group.



Support personnel can be contacted via the London Stock Exchange's Service Control Desk **+44 207 797 3100**, or the Client Technology Group on **+44 207 797 3939**.



Scheduling of the customer test sessions is managed by the London Stock Exchange's customer testing team who can be contacted on **+44 207 797 3100**.